

June 6, 1994

CD-94-11 (LDV/LDT)

Dear Manufacturer:

SUBJECT: Solicitation of Comments on Advisory Circular 17F:  
General Criteria for the Carryover and Carry Across of  
Certification Data and the Carryover of Fuel Economy Data for  
Light-Duty Vehicles and Light-Duty Trucks

Enclosed with this letter is a copy of Advisory Circular (A/C) 17F for your review and comment. This A/C has remained essentially unchanged since its release on November 16, 1982. In the intervening years, advances in automotive engineering and changes to emission standards and test procedures have significantly altered emission control technology.

Recognizing the possibility that A/C 17F may need corresponding changes, the Certification Division will review the A/C to make appropriate changes. We seek your input and expertise to assist us in focusing our efforts. In addition to any general comments you may have, we seek input on these specific topics:

1. A/C 17F describes characteristics of emission-related systems or components (such as engine displacement, test weight basis, catalyst loading, and so forth) that are allowed to differ between the engine family from which carryover is requested and the "new" engine family. The A/C also lists associated criteria for approval for each of these items.

A. What other components or systems should be added?

B. What criteria for approval should be associated with each emission-related component or system, i.e., what sort of data would indicate whether there is equivalency or superiority? (Consider new criteria, if any, for components or systems already given in the A/C, as well as criteria for any new items.)

C. How should catalysts and oxygen sensors be evaluated to determine equivalency or superiority with regard to thermal degradation?

2. Do you have suggestions concerning other items important to carryover issues regarding data vehicles, exhaust and evaporative emission data, and fuel economy data that are not addressed in the preceding questions?

Although we welcome all suggestions for change, we are limiting our consideration for now to changes that do not require modifications to regulations.

We would greatly appreciate it if you would complete your review of A/C 17F and submit your comments quickly. The earlier in our review process that we can consider your input, the more effectively it can be incorporated. Please send your comments to Ms. Mary Walsh of the Certification Division by July 5, 1994.

Sincerely,

Robert E. Maxwell, Director  
Certification Division

Enclosure

cc: CARB  
EPSD  
MOD  
OGC  
RDSD

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SUBJECT: General Criteria for the Carryover and Carry-Across of Certification Data and the Carryover of Fuel Economy Data for Light-Duty Vehicles and Light-Duty Trucks

I. Purpose

The purpose of this advisory circular (A/C) is to set forth EPA's policy regarding the use of certification data in more than one category or subcategory of vehicles of the same model year (known as "carry-across") and the use of data from previous model years' certification vehicles (known as "carryover"). A/C No. 17E is superseded beginning with the 1983 model year.

II. Background

A. General Background

40 CFR 86.082-24(f) provides that the Administrator may accept data from a vehicle for which certification has previously been obtained or for which all applicable data required under Section 86.082-23 have previously been submitted and which is similar to another emission-data or durability-data vehicle selection. This provision is the basis for carryover and carry-across and permits manufacturers to obtain certification without unnecessarily incurring the costs and delays of building and testing certification vehicles.

B. Recent Revisions

1. Although some interaction between evaporative and exhaust

emission levels is likely, the amount of interaction is not expected to be large enough to significantly affect the deterioration of exhaust emission control systems. Therefore the evaporative emission family and control system restrictions of A/C No. 17E, paragraphs VI.A.3.b and c, have been deleted.

2. EPA initiated the voluntary Abbreviated Certification Review Program in a letter to manufacturers dated December 15, 1978. In Attachment A of the letter, EPA said that manufacturers may decide in lieu of the Administrator the appropriateness of using emission data from previously certified vehicles to represent test results of similar emission-data and durability-data vehicles in lieu of testing said vehicles. The abbreviated certification review program procedure was formally adopted in 40 CFR 86.080-12 on April 17, 1980. Manufacturers have been routinely making their own carryover decisions, subject to EPA audit, since that time.

3. In order to facilitate the efficient carryover of durability data based on equivalence or superiority, a list of vehicle differences and specific data requirements has been added to Section

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IX. This will allow manufacturers to approve durability carryover based on equivalence or superiority In certain limited situations.

4. EPA policy concerning test weight intervals was established in a memorandum to Certification Branch members dated April 24, 1979. The memorandum stated that emission-data carryover would not be jeopardized if a vehicle had been tested at a higher test weight in a previous year and the request for carryover was to represent a vehicle at a lower test weight. The inertia weight class restriction of A/C No. 17E paragraph VI.A.4.d has been deleted to reflect this policy.

5. On September 25, 1980, EPA published regulations in 40 CFR 86.084-28(b)(4) that allow manufacturers to design their own testing procedures for determining emissions deterioration factors for light-duty trucks starting with the 1984 model year. Under these regulations, the manufacturer is responsible for determining the applicability of carryover of deterioration factors for light-duty trucks. As in the past, carryover guidelines established for light-duty vehicles may be used by the manufacturer for light-duty trucks where applicable.

6. EPA sent a letter to manufacturers dated July 1, 1981 which contained Certification Program Policy Changes including several changes to A/C No. 17E. Paragraph VI.A.3.d was changed to allow equivalent test weight to increase by 500 pounds for durability-data carryover. Paragraph VI.A.3.f was deleted to remove the road-load horsepower constraint for durability-data carryover. Paragraph VI.A.5.b was changed to allow emission-data carryover of back-to-back running change testing. This A/C has been revised to reflect these policy changes.

8. On October 13, 1981 EPA published regulations in 40 CFR 86.082-26(a)(3)(i)(A) and (ii)(A) that allowed emission-data vehicles to accumulate more than 4,250 miles but required the fuel economy data to be factored after 6,200 miles. Paragraph V.A.6 of this advisory circular was added to ensure that any data generated by a fuel economy data vehicle which was carried over to fulfill emission-data requirements would also be factored.

### III. Applicability

This advisory circular is effective immediately and is applicable to 1983 and later model year light-duty vehicles and light-duty trucks.

NOTE: To avoid repetition of phrases such as "prior model year," "current model year," and "year for which certification is sought," general applicability references are made to model years 1982 and 1983. These references do not limit the applicability of this A/C.

In applying this circular to other model years, 1983 shall be considered to have the same meaning as "year for which certification is sought," and 1982 to mean "year in which carryover data were generated," or "prior model year."

IV. Relationship Between Emission Data Carryover and Fuel Economy Data Carryover

A. Although the carryover of certification data is treated separately from the carryover of fuel economy data in this A/C, the approval of fuel economy data carryover depends on the acceptability of emission data carryover. Conversely, in some cases, emission data carryover may not be approved in light of information obtained while generating new fuel economy data. For these reasons, neither emission data carryover or fuel economy data carryover will be approved nor denied until the acceptability of both of these sets of data is determined.

B. In general, three conditions can exist relating to emission data carryover and fuel economy data carryover, as follows;

1. If both emission data and fuel economy data carryover criteria are met, emission data and fuel economy data carryover will be approved.

2. If emission data carryover is found to be unacceptable, neither emission data nor fuel economy data carryover will be approved.

3. If the emission data carryover criteria are met, but the fuel economy data are found to be unacceptable for carryover, fuel economy data carryover will not be approved and new fuel economy data will be required. Emission data carryover will not be approved at this time. If the new fuel economy data are acceptable and the fuel economy data vehicle meets the 1983 emission standards, emission data carryover will be approved.

C. A flow chart depicting a general carryover evaluation procedure is attached to this A/C.

V. General Criteria for Carryover of Exhaust Emission Data

A. An initial determination as to the acceptability of the proposed carryover data will be based in part on such considerations as the similarity of test results between the manufacturer's and EPA's

facilities, special problems, or marginal emission performance encountered during 1982 certification. The ultimate determination will be made as follows:

1. The 1983 certification test vehicle selection will be designated just as if carryover had not been requested.

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2. The test vehicle selection for 1983 will be compared with the vehicle which generated the proposed carryover data.

3. Carryover durability data will be accepted if the 1982 durability-data vehicle:

- a. Qualified to be grouped in the same engine family<sup>1</sup> as the durability-data vehicle designated for 1983--vehicles not qualified to be grouped In the same family may be evaluated under the provisions of Section IX,

- b. Was equipped with the same exhaust and crankcase emission control systems as the durability-data vehicle designated for 1983--vehicles not equipped with the same control systems may be evaluated under the provisions of Section IX,

- c. Was tested at the same, heavier. or no more than 500 pounds lighter equivalent test weight as the durability-data vehicle designated for 1983,

- d. Was generally representative of the durability-data vehicle which was designated for 1983 model year certification in terms of other parameters judged to be significant by EPA (e.g., engine displacement, auxiliary emission control devices, etc.),

- e. had interpolated test results which could comply with the provisions of 40 CFR 86.082-28, and

- f. Had all emission-related scheduled maintenance items performed at the same or less frequent mileage interval as is scheduled for the 1983 vehicles for which carryover is sought. Maintenance items which were scheduled to be performed on the 1982 vehicle on an "inspect and perform if necessary" basis, but were not performed as a result of the inspection, may generally be eliminated from the 1983 maintenance schedule (if justification is provided) without jeopardizing durability carryover. Less frequent 1983 model

year maintenance also may be approved if the manufacturer demonstrates that such maintenance results in equivalent or superior emission control performance (see Section IX).

4. Carryover emission data normally will be accepted If the 1982 emission-data vehicle:

a. Qualified to be grouped in the same engine family<sup>1</sup> as the emission-data vehicle designated for 1983,

b. Qualified to be grouped in the same evaporative emission family<sup>2</sup> as the emission-data vehicle designated for 1983--vehicles not qualified to be in the same evaporative emission family may be evaluated under the provisions of Section IX,

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c. Was equipped with the same exhaust, evaporative<sup>3</sup>, and crankcase emission control systems as the emission-data vehicle designated for 1983,

d. Was tested at the same or heavier equivalent test weight and had the same transmission configuration (i.e., manual, automatic, semi-automatic, number of forward gears, overdrive [if used during FTP], torque converter multiplication ratio, stall speed, and shift calibration) and N/V ratio (within three percent in any of the forward gears),

e. Used a shift procedure which, for any upshifting sequence (e.g., shifting from second to third), differs by no more than 3 mph from the shift procedure recommended by the manufacturer (in accordance with 40 CFR 86.128-79) for the emission-data vehicle designated for 1983 (see paragraph 4.d, above),

f. Differed from the emission-data vehicle selected for 1983 only in ways (e.g., calibration differences) in which, in EPA's technical judgment, would cause the 1983 vehicle to have equivalent or superior emission characteristics,

g. Had a road-load horsepower value of at least 90 percent of that road-load horsepower setting designated for the 1983 model year, and



h. had emission test results which would comply with the 1983 standards after the applicable deterioration factor has been applied.

5. Carryover of data from running change vehicles will be accepted if the running change vehicle meets the criteria of paragraph 4 above.

6. Carryover of data from fuel economy data vehicles to satisfy certification emission-data requirements will be accepted if:

a. The vehicle meets the criteria of paragraph 4 above, and

b. The fuel economy data has been factored according to 40 CFR 86.082-26(a)(3)(i)(A) and (ii)(A). (If the data has been previously submitted unfactored, it should be factored and resubmitted as a new test.)

B. If, based on the above criteria (including the initial determination regarding the acceptability of the proposed carryover data), exhaust emission carryover data would satisfy 1983 model year

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testing requirements, EPA may allow its use. In the event carryover of exhaust emission durability data is granted, the exhaust emission deterioration factor will be used to determine if emission-data vehicles, proposed running changes, or model additions meet the exhaust emission standards.

#### VI. Criteria for Carryover of Evaporative Emission Data

For evaporative durability data, the manufacturer is responsible for determining the applicability of carryover of the evaporative deterioration factor. For evaporative emission data, an initial determination as to the acceptability of the proposed carryover data will be based in part on considerations including the similarity of test results between the manufacturer's and EPA's facilities or special problems encountered during the 1982 certification program. The ultimate determination will be made as follows:

A. The 1983 certification test vehicle(s) will be designated just as if carryover had not been requested.

B. The evaporative emission control system of the test

vehicle(s) selected for 1983 will be compared with the respective 1982 system.

C. Carryover evaporative emission data will be accepted if the 1982 emission-data vehicle was tested for evaporative emissions, and:

1. Qualified to be grouped in the same evaporative emission family as the emission-data vehicle designated for 1983,

2. Was equipped with the same exhaust, evaporative<sup>3</sup>, and crankcase emission control systems as the emission-data vehicle designated for 1983,

3. Differed from the emission-data vehicle selected for 1983 only in ways (e.g., calibration differences) which, in EPA's technical judgment, would cause the 1983 vehicle to have equivalent or superior emission characteristics, and

4. Had emission test results which would comply with the 1983 standards after the deterioration factors have been applied.

#### VII. Criteria for Use of Certification Carry-Across Data

A. The criteria for determining if two (or more) vehicles are sufficiently similar to permit the carry-across (applying data to vehicles from more than one family or system within the same model year) of certification data, for either exhaust or evaporative emissions, are that the data shall meet the appropriate criteria used to judge the acceptability of data for carryover purposes.

B. Two situations exist for which the use of carry-across data is feasible:

1. Light-duty vehicles and trucks; Although the standards for gasoline-fueled and diesel light-duty vehicles differ from the standards of the corresponding types of light-duty trucks, some manufacturers have elected to employ the same emission control techniques on passenger cars and light-duty trucks. Because the emission test procedures for gasoline-fueled light-duty vehicles are the same as those for light-duty trucks (except for the horsepower calculations), as are the emission test procedures for diesel light-duty vehicles and light-duty trucks, the data generated from a gasoline-fueled LDV (or LDT) may be used to satisfy data requirements for a LDT (or LDV), provided the appropriate carryover criteria provided in this A/C are met.

2. Evaporative emission testing within an evaporative emission family: The evaporative emission regulations for LDV's and LDT's (41 FR 35626) established the evaporative emission family concept. This concept is intended to require evaporative emission testing of only those test vehicles which represent unique evaporative emission control systems. Carry-across of data will be approved if, under the provision of A/C No. 59, the individual evaporative emission families were eligible to be grouped together as a single evaporative emission family and if the minimum data requirements of the combined family are represented, in whole or in part, by the data for which carry-across is requested. Since LDV and LDT evaporative emission families must be separate, if two emission families differ only in that one is for LDV's and one is for LDT's, carry-across of data will be acceptable. Additional data requirements of the combined family, of course, would also have to be met before certification can be granted.

#### VIII. Requesting the Use of Carryover and Carry-Across Certification Data

If a manufacturer intends to use carryover or carry-across data to satisfy the 1983 model year certification requirements, EPA should be notified in the cover letter accompanying the 1983 application for certification. Then, the manufacturer must provide the test data which the manufacturer proposes to use and a complete list of differences between the vehicle(s) specified for 1983 and the vehicle(s) which generated the data for which carryover is being requested. In addition, the manufacturer should include a complete description of the vehicles (whether durability-data, emission-data, fuel economy, or running change vehicles) which generated the data as a supplement to

the application (relevant pages from the 1982 application are usually acceptable for this purpose) or should refer to the appropriate pages in the 1982 application.

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IX. Other Demonstration of Certification Carryover or Carry-Across Applicability

If a 1982 vehicle does not qualify for carryover or carry-across under Sections V, VI, VII, and VIII outlined above, but the vehicle difference(s) would indicate that the 1983 model year vehicle will have equivalent or superior performance, data from the 1982 Model year vehicle may still be acceptable upon demonstration by the Manufacturer of the equivalence or superiority of the proposed configuration through use of emission data or other information to be evaluated on an individual basis.

The following list of examples is provided to facilitate the efficient use of this option regarding the carryover or carry-across of durability data. The list contains examples of vehicle differences which have either been previously-approved by EPA or which, in EPA's opinion, are likely to result in equivalent or superior emissions durability. The list is not intended to limit the use of this option. EPA will continue to evaluate requests for vehicle differences not listed below on an individual basis. In order for the manufacturer to approve durability carryover under the Abbreviated Certification Review Program protocols for one or more of the changes listed below, all of the other engine family or emission control system parameters listed in 40 CFR 86.082-24(a)(2) or Advisory Circular No. 20-B must be the same. The manufacturer is allowed to approve durability carryover if one or a combination of the vehicle differences listed below exist.

Regarding manufacturer approval of carryover based on equivalence or superiority for items listed below, the basic philosophy is that if a particular system has been certified its physical durability and emissions stability have been sufficiently demonstrated for purposes of preproduction certification. If, in addition, catalyst thermal degradation is not significantly increased, EPA believes durability carryover can be approved without significant risk to emissions performance. Catalyst temperature, while not the sole indicator of emissions performance, is in EPA's opinion a significant indicator. Since catalyst temperatures provide objective criteria for assuring

that thermal degradation of the catalyst does not increase, the manufacturers can be allowed to approve carryover. For new or unproven systems, however, EPA has no assurance that carryover can be approved without significant risk to emissions performance. Therefore, Manufacturers must continue to submit to EPA requests for carryover of data to new systems or to systems that EPA has not determined are likely to result in equivalent or superior performance as outlined below.

In certain instances, EPA expects that manufacturers will want to carryover data to a vehicle using systems or components that are not identical to ones that have been used in a family that has been previously certified. In those cases where a particular system or

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component differs by more than calibrations from one that has been used previously, it is the manufacturers' responsibility to assure that whatever minor differences exist will not adversely affect emissions deterioration. If the manufacturer does not have an adequate basis and associated documentation for such a determination, carryover should not be approved. EPA intends to exercise its option to audit and review data or other information utilized in making such determinations. This audit process will be facilitated if the manufacturer prepares a list of all differences (other than calibrations) between the system or component intended for production and the one that was previously used in a certified family and addresses the durability impact of each difference. In addition, EPA may confirm the validity of the Manufacturers' determinations through its in-use vehicle testing programs which could result in recall and denial of future carryover of particular data.

#### A. Engine Displacement

Carryover of durability data from a larger displacement engine to one that is more than 50 cubic inches or 15 percent smaller may be approved by the manufacturer if:

1. the engines are otherwise qualified to be in the same engine family in terms of the engine parameters specified in 40 CFR 86.082-24(a)(3), and
2. catalyst thermal degradation does not increase significantly<sup>4</sup> due to this change.

If the block configuration, valve locations, or cylinder bore center-to-center dimensions are not the same, the manufacturer must submit a request for carryover with specific information, catalyst temperature data, and any evidence of engine out emissions stability (may include bench test data, etc.) to EPA for evaluation.

## B. Fuel System

Case 1. The number of carburetors, number of venturis, or principle of carburetor operation (e.g., simple venturi, air valve, constant depression) may be deemed equivalent for durability purposes and the manufacturer may approve durability carryover if:

1. the carburetor model intended for production has been used in a family that has been previously certified<sup>5</sup> by that manufacturer and

2. catalyst thermal degradation does not increase significantly<sup>4</sup> due to this change.

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Case 2. Carryover of durability data from a vehicle using one or more carburetors to a vehicle using any electronic timed or pulsed fuel injection system may be approved by the manufacturer if:

1. the fuel injection system design intended for production has been used in a family that has been previously certified<sup>5</sup> by that manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.<sup>4</sup>

Case 3. Carryover of durability data from a vehicle using throttle body fuel injection to a vehicle using electronic timed or pulsed multipoint intake manifold fuel injection may be approved by the manufacturer If:

1. the fuel injection system design intended for production has been used in a family that has been previously certified<sup>5</sup> by that manufacturer and

2. catalyst thermal degradation does not increase

significantly due to this change.<sup>4</sup>

For any other fuel system changes that could not normally be grouped in the same engine family, the Manufacturer must submit a request for carryover with specific information, catalyst temperature data, and any evidence of physical durability or engine out emissions stability (may include bench test data, etc.) to EPA for evaluation.

### C. Catalyst

Case 1. The manufacturer may approve the carryover of durability data for any of the following differences:

1. change in general catalyst location away from engine (downstream movement, e.g., from engine compartment to underfloor area).
2. increase in catalyst volume (in excess of 15 percent of largest volume) at the same or higher noble metal loading (g/ft<sup>3</sup> and proportion of active constituents).
3. increase in active material loading of any or all noble metals (proportion of active constituents may only be changed by increasing the load of particular noble metals--decreases in active material loadings must be evaluated under the "essentially equivalent" provisions of A/C No. 20B).

Case 2. Carryover of durability data to a vehicle using different basic catalyst packaging (e.g., materials, technique of

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containment and restraint, and general method of construction) or substrate construction technique (e.g., extruded, laid-up, formed) may be approved by the manufacturer if:

1. the basic catalyst packaging or substrate construction technique intended for production has been used in a family that has been previously certified<sup>5</sup> by that Manufacturer and
2. catalyst thermal degradation does not increase significantly due to this change.<sup>4</sup>

For any other catalyst changes that could not be grouped in the same engine family and emission control system under A/C 20B, the

manufacturer must submit a request for carryover with the specific information, catalyst temperature data, and evidence of physical durability and emissions stability to EPA for evaluation.

D. Air Injection

Case 1. Carryover of durability data to a vehicle which differs in general location of injected air, general method of driving air pump, or modulation of secondary air flow rate may be approved by the manufacturer if:

1. the basic air injection system intended for production, including general location of injected air, general method of driving air pump, or modulation of secondary air flow rate, as applicable, has been used in a family that has been previously certified<sup>5</sup> by that Manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.<sup>4</sup>

Case 2. Pump air injection and pulse air injection may be deemed equivalent for durability purposes and durability carryover may be approved by the manufacturer if:

1. the basic air injection system intended for production, including general location of injected air, general Method of driving air pump, or modulation of secondary air flow rate, as applicable, has been used in a family that has been previously certified<sup>5</sup> by that manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.<sup>4</sup>



Case 3. Carryover of durability data from a vehicle with no air injection to a vehicle with either pump air injection or pulse air injection may be approved by the manufacturer if:

1. the basic air injection system intended for production, including general location of injected air, general method of driving air pump, or modulation of secondary air flow rate, as applicable, has been used in a family that has been previously certified<sup>5</sup> by that manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.<sup>4</sup>

For any other air injection changes that could not be grouped in the same control system under A/C No. 20B, the manufacturer must submit a request for carryover with specific information, catalyst temperature data, and any evidence of physical durability or emissions stability (may include bench test data, etc.) to EPA for evaluation.

#### E. Exhaust Gas Recirculation

Carryover of durability data to a vehicle which differs in general location of exhaust gas pickup, general point of exhaust gas introduction, or general method of modulating quantity of EGR may be approved by the manufacturer if:

1. catalyst thermal degradation does not increase significantly due to this change<sup>4</sup> and

2. the basic EGR system intended for production, including general pickup location, general introduction point, and general modulation method, has been used in a family that has been previously certified<sup>5</sup> by that manufacturer. (EPA has noted that other items such as EGR valve location and pintle design, EGR flow passageway design, cooling method design, transducer designs, diaphragm materials, etc., can also affect EGR system deterioration. The Manufacturer should document that any changes to these items do not cause increased EGR system -deterioration.)

For any other EGR changes that could not be grouped in the same control system under A/C No. 20B, the manufacturer must submit a request with specific information, catalyst temperature data, and evidence of physical durability and emissions stability (may include bench test data) to EPA for evaluation.

#### F. Electronic Control Systems

While Electronic Control Systems are not listed among the engine family or emission control system determinants in A/C No. 20B,

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EPA has noted that certain aspects of these systems can affect emissions durability and offers the following as a guideline for assuring that the 1982 durability-data vehicle was generally representative of the 1983 durability-data vehicle. Different electronic control systems may be deemed equivalent for durability purposes and the manufacturer may approve durability carryover under the following conditions:

1. The sensor and controller designs intended for production have been used in a family that has been previously certified<sup>5</sup> by that manufacturer.
2. The use of a malfunction warning system may not be deleted.
3. The following parameters may not be deleted:
  - a. Electronic Spark Control
  - b. Sensing of EGR Valve Position or Flowrate
4. The following parameters may not be added or deleted:
  - a. Sensing of Exhaust Gas Oxygen or Content
  - b. Sensing of mileage (or inferred mileage in the form of Time)
  - c. EGR Control
  - d. Feedback Fuel Control

Requests for carryover that do not meet the above conditions may be submitted to EPA for evaluation. The request should include specific information and evidence of physical durability and emissions stability (may include bench test data, etc.)

X. General Criteria for Carryover of Fuel Economy Data From Vehicles for Which Certification Carryover is Requested

A. When requesting approval to use emission data generated by vehicles selected in accordance with the provisions of 40 CFR Part 86 for carryover certification, the manufacturer should be cognizant of the fact that the EPA approved fuel economy values must also be considered as part of the request. These fuel economy data, or the fuel economy data generated in accordance with the criteria set forth in paragraph X.F, will be used in the fuel economy data base.

B. The general criteria which EPA will use to determine the appropriateness of any carryover request are outlined in Section IV. For fuel economy carryover purposes, any certification vehicle for which emission carryover is requested and which satisfies the criteria in Section V of this A/C also satisfies the provisions of 40 CFR 600.007-80(a) for vehicle acceptability.

C. A carryover request which does not satisfy the general criteria set forth in Section V of this A/C will not be considered for either

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emission-data carryover or fuel economy carryover and, therefore, a new emission-data vehicle will be required.

D. Once the vehicle acceptability has been determined, the 1982 data will be evaluated as to representativeness for 1983 by determining if (as a minimum):

1. The 1982 vehicle was tested at the same or higher equivalent test weight,
2. The 1982 vehicle was tested at the same or higher road load,
3. The 1982 vehicle was shifted in a manner consistent with the shift procedure guidelines set forth in A/C No. 72 or at speeds which would be expected to understate the fuel economy performance,
4. The 1982 vehicle differed from the 1983 emission-data vehicle selected only in ways which, in EPA's technical judgment, would cause the 1983 vehicle to have equivalent or superior fuel economy characteristics.

E. For those certification and fuel economy data judged by EPA to be representative, the fuel economy data generated by the certification vehicle will be used, that is, carryover of data (both fuel economy and certification) will be approved. In fact, data from a certification vehicle which satisfy the criteria for acceptability and representativeness must be used in the fuel economy program.

F. In those cases where the certification data satisfy the criteria of Section V, but the fuel economy are judged by EPA to be unrepresentative because they would be expected to overstate the 1983

fuel economy values, or there is a degree of uncertainty regarding the evaluation of representativeness in paragraph X.D above, the Manufacturer will be required to test a 1983 fuel economy data vehicle (FEDV). If any of the emission levels from the FEDV exceed the emission standards with the appropriate deterioration factor applied, then the data from the FEDV are unacceptable and the request for carryover of 1982 emission data will be denied. If the data meets the standards and the requirements of 40 CFR 600.007-80 then, because the FEDV is a 1983 vehicle tested in accordance with the 1983 test procedures, the FEDV will satisfy the criteria of acceptability and representativeness. However, the data must still satisfy a fuel economy reasonableness check.

G. If the fuel economy data from the 1983 FEDV are judged to be reasonable, the data will be used. Also, if the data from the 1983 FEDV confirm the fuel economy data from the 1982 emission-data vehicle, both sets of fuel economy data will be used. In both cases, the emission results from the 1982 emission-data vehicle will be used. That is, the carryover request (both fuel economy and emission-data) will be approved.

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H. If the fuel economy data generated by the 1983 FEDV at the manufacturer's facility are judged to be unreasonable, the vehicle will be subjected to EPA confirmatory testing. If the emission data, generated at EPA in accordance with the provisions of 40 CFR 86.081-29, do not meet the emission standards with the appropriate deterioration factor applied, carryover will be denied and a new emission-data vehicle will be required. If the emission data from the 1983 FEDV meets the emission standards, the 1983 emission-data carryover request will be granted. However, the fuel economy data must still satisfy the reasonableness criteria.

I. Once the fuel economy data generated at EPA satisfy the reasonableness check, the fuel economy data from the 1983 FEDV will be used to satisfy the 1983 fuel economy carryover request and emission data carryover will be granted, as described in paragraph X.G.

#### XI. General Criteria for Carryover of Fuel Economy Data from Vehicles Other Than Those for Which Certification Carryover is Requested

A. A request for carryover of fuel economy data from vehicles other than those for which certification carryover is requested must be submitted with an FEDV package indicating that the data are from a prior model year.

B. Vehicles other than those for which certification carryover is requested must satisfy the criteria set forth in Section V of this A/C to be considered for fuel economy carryover.

C. Since the vehicles which generated these data have previously satisfied the vehicle acceptability and data reasonableness criteria, the data need only satisfy the representativeness criteria (paragraph X.D of this A/C).

D. Data which satisfy all of the criteria will be included in the fuel economy data base in accordance with the provisions of 40 CFR 600.008-77(b).

E. Any vehicle which does not satisfy the certification carryover criteria and/or data which do not satisfy the representativeness criteria will cause the carryover request to be denied.

Richard D. Wilson  
Director, Office of Mobile Sources

Attachment

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#### ENDNOTES TO ADVISORY CIRCULAR No. 17F

1. "Qualified to be grouped in the same engine family" means that the current year vehicle and the vehicle which generated the proposed carryover data must be identical in all the aspects listed in A/C No. 20B, Sections D, E, F (four-stroke, two-stroke or rotary engines respectively).
2. "Qualified to be grouped in the same evaporative emission family" means that the current year vehicle and the vehicle which generated the proposed carryover data must be identical in all the aspects listed in A/C No. 59, Section D.

3. The same basic evaporative emission control system as specified in A/C No. 59, Section E.
4. It is the manufacturer's responsibility to assure that an increase in catalyst temperature will not result in increased thermal degradation of the catalyst. If the manufacturer has any reason to suspect that thermal degradation of the catalyst will increase significantly, carryover may not be approved. EPA believes that thermal degradation of the catalyst is not likely to increase if catalyst temperatures do not increase. EPA intends to look more closely at those cases where catalyst temperatures increase significantly. Criteria are offered below as a guideline to determine if catalyst temperatures are significantly affected. These criteria allow small increases in time and temperature to account for measurement variability. A manufacturer may determine that other criteria are more appropriate for establishing the acceptability of carryover for its designs. The manufacturer should document the basis for its determination that thermal degradation of the catalyst will not increase significantly. If a manufacturer believes that the following guideline is not appropriate for a particular situation and can document that thermal degradation of the catalyst will not increase even though these criteria are not met, durability carryover may still be approved. However, when the following criteria are not met, the manufacturer should notify EPA in writing at the time the carryover decision is made. This will allow most timely EPA audit of the manufacturer's carryover decision. The amount of time spent in the following temperature intervals is not increased by more than 3 percent or 60 seconds, whichever is greater, during the mileage accumulation cycle (approximately 2 hour cycle) unless there is a corresponding decrease in time at a higher temperature interval. The temperature intervals higher temperature

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interval. The temperature intervals are 601°C to 650°C, 651°C to 700°C, 701°C to 750°C, and 751°C to 800°C (other intervals within this range may be appropriate, the 60 second tolerance applies to a 50-C interval). If maximum temperatures are above 800 C, the maximum temperature is not increased by more than 2 percent and amount of time above 800°C is not increased by more than 2 percent or 30 seconds, whichever is greater. If the catalyst uses  $Al_2O_3$  for support but does not contain Ni, only increases in time at temperatures

above 700°C need to be considered. for oxidation catalysts which use  $\text{Al}_2\text{O}_3$  for support but do not use Ni and do not use Rh, only increases in time at temperatures above 750°C need to be considered.

Whenever possible, the impact of a change on catalyst temperatures should be evaluated on a single vehicle, preferably the original durability-data vehicle. If the original durability-data vehicle is not available, the highest selling configuration from either of the model years is preferred. If it is not practical to evaluate the change on a single vehicle. other vehicle differences which could affect catalyst temperatures should be minimized. Again, configurations representing highest sales from each model year should be used if practical.

Thermocouples should be located to provide accurate measurement of maximum temperatures. Each manufacturer should obtain a description of such location from his catalyst supplier and retain this with the rest of the documentation. If this is not possible, for monolith catalysts, thermocouples may be located within the catalyst substrate at the approximate radial center of the exhaust stream and approximately one inch downstream from the front face of the substrate. If the catalyst is composed of multiple containers or multiple substrate biscuits in the same container, more than one thermocouple is required. Locate one thermocouple within each substrate biscuit as described above. Thermocouples should not be located in the exhaust pipe, in free exhaust air, or directly in the delivery path of secondary air injection systems.

5. Carryover may not be approved for any components or systems that were used in families certified without completing the 50,000-mile certification proveout under the small-volume provisions of 40 CFR 86.082-24 (e). Manufacturers must continue to submit requests to EPA for carryover involving systems or components that have not completed the 50,000-mile certification proveout. Requests for carryover may also be submitted to EPA if the 50,000-mile certification proveout has been successfully completed but a certificate was never obtained.

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